Breakfast of Champions

Topics: Recent releases of handbooks by the standards-setting orginzations SNAP, GRACOL, and SWOP.

Column first appeared: June 2001, *Electronic Publishing* magazine.

*Source of this file:* Author's draft as submitted to the magazine.

Author's comment: This column reads well ten years later. We still have the same situation with respect to standards today, where the organizations offer a great deal of wisdom, spiced with some serious misconceptions.

This archive, to be released over several years, collects the columns that Dan Margulis wrote under the *Makeready* title between 1993 and 2006. In some cases the columns appear as written; in others the archive contains revised versions that appeared in later books.

Makeready in principle could cover anything related to graphic arts production, but it is best known for its contributions to Photoshop technique, particularly in the field of color correction. In its final years, the column was appearing in six different magazines worldwide (two in the United States).

Dan Margulis teaches small-group master classes in color correction. Information is available at http://www.ledet.com/margulis, which also has a selection of other articles and chapters from Dan's books, and hundreds of edited threads from Dan's Applied Color Theory e-mail list.
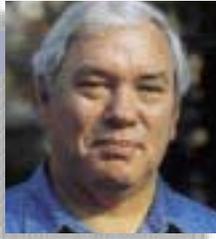
Breakfast of champions

A venerable standards-setter releases its ninth edition. Has it kept up with the digital age? Some parts are wise, others dead wrong, but it's always an interesting read.

I t used to be thought that the healthiest kind of breakfast started with griddle cakes and a side of bacon or sausage. Biscuits and gravy figured in somewhere, and plenty of maple syrup.

Nowadays our tolerance for calories, cholesterol, fat grams, and even caffeine has gotten a lot tighter, at the same time that our belts have become somewhat looser. This improvement has come largely because certain standards-setting groups have offered guidelines on what we should consume and how much of it and the likely consequences if we do not do so.

There's a lot to be said for standards. Unfortunately, our industry, like that of breakfast foods, has more self-proclaimed "standards" than anyone could possibly abide by. Many of these are propounded by vendors who'd like us to do things their way and pay them for the privilege. Some come from nominally nonpartisan groups like the International Color Consortium, which has tried to please everybody and wound up pleasing almost nobody.

But on the printing side, there do exist standard-setting organizations that many of us at least pay lip service to. I don't want to pull a Cap'n Crunch on these groups—they have a very important role as we move into fully digital workflows—but neither do I wish to sugar-coat their shortcomings.

They are called—get ready—SNAP, GRACOL, and SWOP.

At 26, SWOP is the oldest, best known by far, and the most misunderstood. In February, it came out with the ninth edition of its handbook, which has never, to my knowledge, been the subject of a magazine review in the last quarter-century, even as far less nourishing graphic titles have gotten lots of press.

Tolerances and oxymorons

SWOP's actual message has had trouble getting out. It was and is aimed at magazine publishing, trying to assure that advertising gets printed to a quality sufficient for the client to be inclined to pay for it. Nevertheless, many sheetfed printers claim that they print to "SWOP standards" and even Photoshop has a couple of separation presets called "SWOP Newsprint" and "SWOP Uncoated," which terms make about as much sense as

"square circle" or "wealthy photographer."

No, it still stands for Specifications for Web Offset Publications, even though for some time it has contained specifications for gravure pubs as well. Yet even magazine publishers misapply it. Ask almost anyone in the magazine industry what the SWOP ink limit is, for example, and they'll tell you a sum of the percentages of all four CMYK inks of 280 or less in the darkest areas. That's what most magazines ask for (this one, piggishly, calls for only 270) but the real SWOP standard is in fact 300.

One of its most valuable roles has been to state normal tolerances for magazine printing. Historically, these have been absurdly broad—they've been tightened up this time—and even so, many magazine and other "SWOP"-type printers fall far outside the spec. The SWOP book is the last recourse of the aggrieved client. People can argue all day about how a picture looks. But if the form contains color bars, as it should, those can be measured, and if they're about three times as far off normal densities as SWOP theoretically allows, the printer will often cave in and give credit.

The old order changeth

Not that many of us do magazine advertising, but it has an inordinate impact on everyone else's production practices. After all, this is where the big bucks are being spent, and where there is little tolerance for error.

Though the methodology of producing these ads has changed somewhat, in principle one can still do it using 1975-vintage technology, separating photographs on a process camera rather than a scanner and using an old style phototypesetter for the text.

At least, one could until recently. SWOP 2001 disallows the "soft dot" that was characteristic of these ancient technologies, specifying a hard laser dot if the advertiser supplies film.

The real maggot in the cereal, however, is that nowadays there is a strong move toward computer-to-plate. That leaves film, the traditional method of getting the ad to the printer, as an undesirable leftover. There are copydot scanners that can read separated film and generate the necessary digital file, but they're expensive and time-consuming, not to mention a potential quality hit.

Obviously an original digital file from the client would be much better, and equally obviously the typical slapdash hand-off to a service provider will not cut it. If the ad can't run because a font is missing or graphics aren't linked properly or spot colors aren't named correctly, the presses aren't going to stop while it gets fixed. Furthermore, the advertiser is likely to get a hefty bill for the reserved space, if the ad can't run.

For some years, an organization called Digital Distribution of Advertising for Publications Association (DDAP) has been on top of this problem, supporting some type of reliable universal format for file interchange. SWOP has been late in seeing the advantage of this, but all that has changed now, because the two organizations have merged.

The format DDAP has been advocating was TIFF/IT, which hasn't gained much of a foothold anywhere except in the publication world. Nowadays a more likely candidate would be PDF, but there are more ways to mess up a PDF file than to prepare an omelet. Hence the need for some kind of foolproof preflight. The one endorsed by SWOP is a variant called PDF/X-1. SWOP sells (as do a couple of other companies) software that analyzes normal PDFs, corrects them for printing if possible, and attaches the required tags that mysteriously make it PDF/X-1 compliant.

We would have known this in the good old days
The idea of a guarantee of total reliability for a PDF file is of course, the Holy Grail. Different vendors (notably CreoScitex and Enfocus) have different ideas of how to achieve it. But PDF variants aren't like oatmeal. A choice of flavors isn't necessarily better.

If PDF/X-1 (or for that matter, TIFF/IT) becomes entrenched in magazine production, there will be a pleasant trickledown effect. It will become a standard in service bureaus, too. It'll be the best thing that ever happened for the "PDF workflow."

Having a standard, any standard, is better than chaos. This is where SWOP and its counterparts (SNAP for newsprint, GRACOL for commercial printing) can have a profound positive effect, provided they have the credibility for people to accept their recommendations.

Unfortunately, all three organizations are underfunded and have to rely on a spirit of volunteerism. Furthermore, the industry luminaries who serve on the guiding committees aren't usually technical wizards.
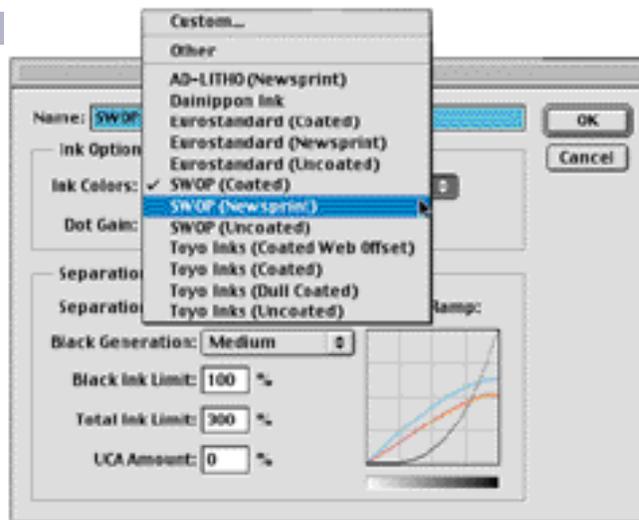
And never the twain shall meet: Photoshop's presets specify kinds of "SWOP" that don't exist. Meanwhile, SWOP's handbook ignores Photoshop altogether.

This results in some peculiar historical detritus, particularly in SWOP's case. For all the hoopla about repositioning itself for the digital age, the SWOP book is full of 1980s—or even earlier—conceptions that have been stale for a long time.

To be sure, some things don't date. If you'd like to find the Murray-Davies equation for dot gain measurement, get the SWOP book, which has 36 pages of pure technical information and advice on how to avoid press difficulties.

But so much has changed in 25 years! At least a few of us have abandoned our process cameras and Scitex Pixets for this newfangled photoretouching software from that upstart outfit of geeks out in San José. SNAP and GRACOL may waste space in their books by talking about that program, but not SWOP, by cracky!

I may have missed it, but I believe there is no instance of the word *Photoshop* in the entire 64-page manual. SWOP needs to wake up and smell the coffee. Many sections would be a lot more comprehensible to the average reader if they were framed in today's terms rather than those of a generation ago.

The lengthy technical section starts the day off with series of blunders on the first spread, all the results of a 1975 mentality, when most professionals carried a loupe in their pockets and had a line gauge hooked to their belts.

With those, a 1975 pro would have little difficulty in determining whether the narrowest parts of letters of a certain font were at least half a point wide, which is what SWOP has always recommended as a minimum if you plan to knock the type out of a screened area. That has never been a particularly sound rule. It would be far more useful to say that small white type on colored areas is a problem with most serifed faces, and for those similar to Times Roman, 18 point is a reasonable minimum size.

Abiding by this would have avoided the error shown on the opposite page, a new graphic in SWOP 2001. One can't judge from the scan at the same size, but the enlarged version shows why, in real life, the block labeled "Good" was, in fact,

anything but. As often happens, the printing isn't quite in register (note the magenta dots hanging at the top of the blue background) and in any event the thin lines of the type vanish between the rows of cyan dots.

Of all the faces with extreme contrast between thick and thin strokes, Bodoni is notoriously the worst. A very good philosophy for those considering the use of this classic design is, deploy it on any kind of background you like—provided it's a shade of white.

But we'd have wimped out here, too

In the good old days, professionals knew that mixing Bodoni and a screen is like a marriage of Rice Krispies and catsup. So, this would never have happened twenty years ago. But get a load of the following, which also begins on the very first spread of the technical section:

"Whoever generates film or plates from digital files must follow the specification shown below…It is desirable to have the dominant color (normally magenta) on the 45º angle. When significant Gray Component Replacement (GCR) is used…black should be printed at the 45º angle."

If you aren't one of the fifteen people in the world who understand the theory of halftone screen angling, permit me to explain that the idea of angling the magenta screen at 45º for certain images used to be popular among the process cameramen who made color separations prior to the advent of drum scanning. I doubt that there was much merit in it, but neither I nor anyone else knows for sure, because few people have run anything but the black at that angle in the last 10 years.

Accordingly, this section has been obsolete for at least the last several editions of the SWOP book. Presumably, every editor during that time was afraid to look dense by challenging anything stated so strongly.

The problem with wimping out like this is that it can cause average folk to feel dense, too. Here is a nominally authoritative source telling you to run your magenta at a strange angle. Have you ever read that suggestion anywhere else? Would you even know how to do it if you wanted to? In the improbable event that you say yes, that the screens can be embedded in an EPS file, forget about it. Most platesetters ignore PostScript screens and substitute their own.

It gets worse. Assume you're not completely buffaloed by the above, and you want to get SWOP's take on this GCR phenomenon, so as to know when to angle the black at 45º.

GCR is correctly explained as the practice of removing approximately equal amounts of cyan, magenta, and yellow from an image, replacing it with black ink. The black plate can therefore theoretically be quite light, quite dark, or anything in the middle, depending on how much or how little

SWOP 2001's advice on how thick type must be to be knocked out of a screened area leaves much to be desired. Above, the graphic at actual size. Below, a greatly enlarged scan shows how the shapes of the letters were lost in the "good" sample during printing.
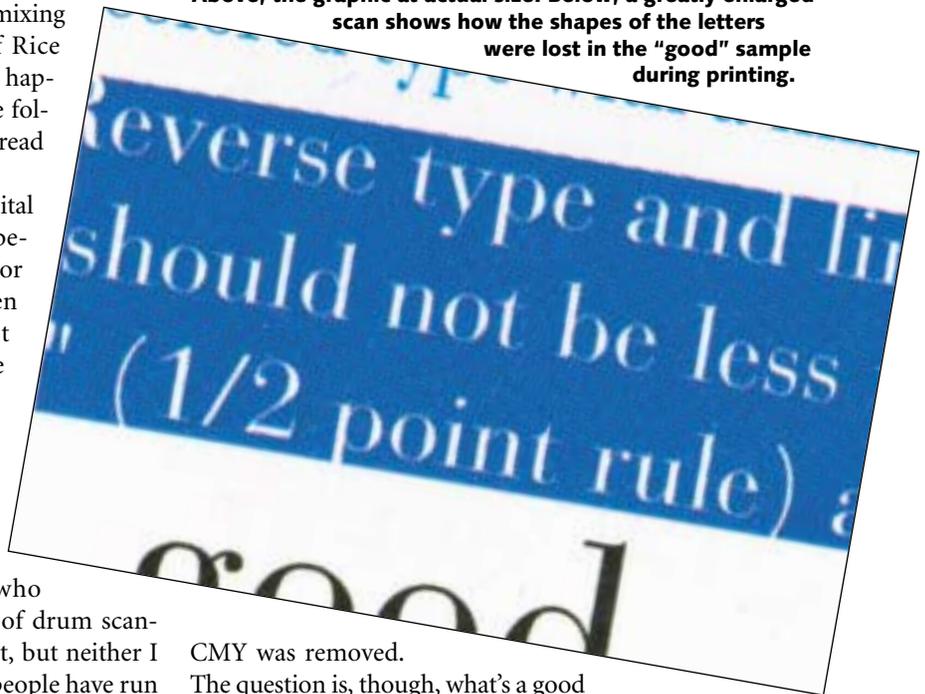
CMY was removed. The question is, though, what's a good amount for magazine reproduction? Here's what SWOP has to say.

"Current recommendations suggest that a safe range of GCR to use is between 30% and 60%. A 50% GCR setting removes 50% of the gray component normally produced by the chromatic [inks] and compensates by adding an equivalent amount of black."

This sounds quite impressive if you have no clue about black generation, but if you do, you will realize it's no more a GCR definition than an Egg McMuffin is Eggs Benedict. No sane method of GCR uses the same percentage of CMY replacement at all levels of darkness.

Even very heavy black generation rarely puts any black at all where there's less than 15 points of each CMY color; even very light variants will reach that 50% number when the CMY inks get to 75% or so. The lower right of the Photoshop graphic on the facing page illustrates an intermediate style—note how as the black gets higher, it also gets higher with respect to the other three inks.

A GCR percentage only makes sense if we also specify at what level of darkness that percentage is applicable, and the

slope of the gray curve at that point. Anything less—such as the paragraph above—is meaningless.

The value of error

These mistakes serve a noble purpose. They remind us that nobody actually knows it all; that things change rapidly in our industry; and that all pronouncements need to be examined with a skepticism inversely proportional to the confidence with which they were made.

It's quite a feast of information that SWOP puts on the table, however, and a lot of it is new. Computer-to-plate workflows have other effects than saving money. There's a much-needed caution that 1% dots are extremely likely to print in CTP workflows, whereas with conventional film they would usually drop out. The background type graphic on page ** is mostly at 1% of CMY. We print computer-to-plate. Is the background visible?

Furthermore, observing that dot gains are usually lower with CTP, SWOP has lowered its CMY targets by two points. and by a full four in black. At the same time, the *tolerable* levels are almost the same, to cater to those still using film. The preferred levels are now at the low end of the tolerable range.

SWOP sticks with the conventional definition of dot gain, which is a measurement at a point that is nominally 50%. SNAP is smarter: it also offers target dot gains for the quarter- and three-quartertones. Also dumber, in that it won't put the numbers into language that its readers can understand.

If SNAP's numbers are correct, and I suspect they are, dot gain in newspaper printing is proportionally heaviest in the quartertone area. Photoshop's newspaper defaults, on the other hand, assume that it's heaviest in the midtone.

So, where is the statement of the obvious in the SNAP handbook? *For newspaper work, you need to go into Photoshop's Dot Gain: Curves settings and make changes if you expect to get valid monitor previews and decent separations.*

This is the basic problem with all three spec books: they're usually technically correct, but often don't answer the glaring question. SWOP, for example, declares that in today's filmless workflow, publications can no longer insist that clients provide them an analog contract proof such as a Matchprint. And it sets forth a slew of requirements for digital proofs, culminating in a suggestion that we should pay to have them cer-

tify ours as being SWOP-compatible.

Fair enough, but many readers may scratch their heads and ask whether they can make their desktop inkjets into magazine contract proofers. The answer to that query is there, if you look hard enough, but it would be a lot easier if that perfectly logical question was answered directly. *No, you can't; your paper is too white, which will make the proof misleadingly clean and bright.*

The value of consistency

The toughest part about keeping a technical guide up to date is understanding when times have changed. One of the clearest trends over the last 25 years is that users aren't as specialized as they once were.

Also, a little bit more of an attempt to speak today's language would go a long way. Expressing things in Photoshop's terminology, for example, would have corrected SWOP's horrific explanation of how much GCR to use.

As we finish our final cup of coffee, we should recollect that, like dot gain, errors in technical manuals are normal, nothing to lose one's appetite over. The question always is, is the current revision better than the last one, not whether it has achieved perfection.

That's the standard we should hold our standard-setters to. SWOP meets it with its new book.

The organization deserves enormous respect for its past accomplishments. Without SWOP, who knows whether the magazine industry could have progressed to its current state?

On the other hand, the entire industry is known for its what've-you-done-for-me-lately philosophy. As the digital revolution progresses, we'll find out whether our leader still has that snap, crackle, and pop.

The signs are fairly good. Printing is still a traditional craft, but technical quality has been improving steadily in the past quarter-century.

Yet our biggest improvement, in my view, is in understanding the big picture. The objective is not to make printing "better." Bad printing isn't bad unless it's unpredictable. What's bad is not to know.

Granted that many printers are so ashamed of their dot gain that they won't tell their clients what it is, the following statement from SWOP 2001 is as welcome as it is wise: "It should be reemphasized that…dot gain is neither good nor bad, whether it be high or low, but rather only detrimental if it is out of control, not consistent."

Perceptive as that statement is, the motto on GRACOL's front cover is even better because it's pithier: "Variation is the sum of all the variables."

Read it again. Some of us get older, some of us get better.